Claims

1. A method of achieving uplink communication from a user terminal to a basestation in a wireless communications system said basestation supporting a plurality of such user terminals; said method comprising the steps of:

(i) for each of a plurality of the user terminals supported by the basestation transmitting a substantially continuous signal simultaneously from the user terminal to the basestation, said signals comprising a repeated spreading code word with a spreading factor and power level arranged such that the resulting background noise level is prevented from causing significant interference at the basestation in use even when more than 250 user terminals simultaneously transmit such continuous signals to the basestation; and

(ii) when a particular user terminal requires to send uplink information to the basestation, indicating this to the basestation by modulating the substantially continuous signal from that user terminal to the basestation.

2. A method as claimed in claim 1 wherein said indication is made by any or all of:

- inverting the phase of the spreading code word;
- using a reduced spreading factor;
- applying a cyclic shift to the spreading code word;
- applying a high order quadrature amplitude modulation (QAM) to the spreading code word;
- sending additional spreading code words in parallel with the spreading code word of the substantially continuous signal.

3. A method as claimed in claim 1, wherein in said step (i) of transmitting, about 250 or more user terminals transmit the substantially continuous signals.

4. A method as claimed in claim 1 wherein said step (ii) further comprises sending uplink information from the particular user terminal to the basestation

using the substantially continuous signal from that user terminal to the basestation and by increasing the information rate of that substantially continuous signal whilst the uplink information is sent.

5. A method as claimed in claim 4 wherein increasing the information rate of the substantially continuous signal during said step (ii) is achieved by any or all of:

- applying a cyclic shift to the spreading code word;
- applying a high order quadrature amplitude modulation (QAM) to the spreading code word;
- sending additional spreading code words in parallel with the spreading code word of the substantially continuous signal.

6. A method as claimed in claim 1 wherein said substantially continuous signal comprises a deterministic, contentionless access channel.

7. A method as claimed in claim 1 wherein said wireless communications system is selected from a mobile, portable, or fixed wireless access system.

8. A method as claimed in claim 1 wherein during said step (i) of transmitting a substantially continuous signal, the spreading factor is about 4096 or higher.

9. A method as claimed in claim 1 which further comprises, at the basestation, receiving the substantially continuous signals and using them to estimate a channel impulse response for each of the user terminals.

10. A method as claimed in claim 1 wherein the substantially continuous signals from each user terminal are arranged to allow the basestation to identify each user terminal.

11. A method as claimed in claim 10 wherein the same spreading code word is repeated in each substantially continuous signal, but with a different cyclic

shift being applied to the spreading code word associated with each user terminal.

12. A method as claimed in claim 10 wherein substantially orthogonal spreading code words are used for different user terminals.

13. A method of operating a basestation in a wireless communications system, said basestation supporting a plurality of user terminals, said method comprising:

(i) receiving a substantially continuous signal simultaneously from each of a plurality of the user terminals supported by the basestation, said signals comprising a repeated spreading code word with a spreading factor and power level arranged such that the resulting background noise level is prevented from causing significant interference at the basestation in use even when more than 250 user terminals simultaneously transmit such continuous signals to the basestation; and

(ii) receiving an indication from one of the user terminals which requires to send uplink information to the basestation, said indication being provided by a modulation of the substantially continuous signal from that user terminal to the basestation.

14. A method as claimed in claim 13 which further comprises in said step (ii) of receiving an indication from one of the user terminals, allocating processing resources of the basestation to receive and process uplink information from that user terminal.

15. A method as claimed in claim 13 which further comprises, in said step (i) of receiving a substantially continuous signals from each user terminal, using those signals to estimate a channel impulse response for each user terminal.

16. A basestation for use in a wireless communications system and arranged to support a plurality of user terminals, said basestation comprising:

(i) an input arranged to receive, at the same time, a substantially continuous signal from each of a plurality of the user terminals supported by the basestation, said signal comprising a repeated spreading code word with a spreading factor and power level arranged such that the resulting background noise is prevented from causing significant interference at the basestation even when more than 250 user terminals simultaneously transmit such continuous signals to the basestation; and

(ii) wherein said input is further arranged to receive an indication from one of the user terminals which requires to send uplink information to the basestation, said indication being provided by a modulation of the substantially continuous signal from that user terminal to the basestation.

17. A basestation as claimed in claim 16 which comprises a processor and an allocator arranged to allocate resources of that processor to receive and process uplink information from a user terminal which has made an indication that it requires to send uplink information.

18. A wireless communications network comprising a basestation as claimed in claim 17.

19. A computer program stored on a computer readable medium and arranged to control a basestation in order to carry out the method of claim 13.

20. A user terminal for use in a wireless communications system, said user terminal being one of a plurality of terminals supported by a basestation in the wireless communications network; said user terminal comprising:-

(i) a transmitter arranged to transmit a substantially continuous signal to the basestation said signal comprising a repeated spreading code word with a spreading factor and power level arranged such that in use the resulting background noise level is prevented from causing significant interference at the basestation in use even

when more than 250 user terminals simultaneously transmitting such continuous signals to the basestation; and

(ii) a processor arranged to modulate the substantially continuous signal in order to indicate to the basestation that it is required to send uplink information.